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## COLLIDER-ACCELERATOR DEPARTMENT

Title: Calibration

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Group: Quality Assurance

### Approvals

\_\_\_\_\_  
ESHQ Division Head

\_\_\_\_\_  
Date

\_\_\_\_\_  
Collider-Accelerator Department Chairman

\_\_\_\_\_  
Date

(Indicate additional signatures)

Y N

☐ ☐ FS Representative:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ Radiological Control Coordinator:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ Chief ME:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ Chief EE:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ Environmental/P2 Coordinator:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ QA Manager:\_\_\_\_\_

Date:\_\_\_\_\_

☐ ☐ Other:\_\_\_\_\_

Date:\_\_\_\_\_

## **1.0. Purpose**

To define a calibration program, for the Collider-Accelerator Department (C-A), which supplements the BNL's Standards Based Management System (SBMS) Calibration subject area. This program applies to the calibration and maintenance of Measurement & Test Equipment (M&TE), and associated standards, that are to be used to verify conformance to prescribed high accuracy technical requirements during inspection, testing and research.

- 1.1 For general definitions reference the SBMS subject areas related to Calibration and Nonconformance and Corrective and Preventive Action

## **2.0 Responsibilities**

- 2.1 M&TE, associated standards, and fixtures or tools used for measurement purposes, shall be reviewed by the project engineer or liaison engineer to determine whether calibration is required.
- 2.2 Operations, maintenance and engineering personnel are required to employ calibrated tools, standards, and instruments when specified in the quality assurance, operations, maintenance or ES&H procedures.

## **3.0 Prerequisites**

None

## **4.0 Precautions**

None

## **5.0 Procedure**

- 5.1 Any item to be used for acceptance purposes or where critical measurements are to be made shall be labeled such that potential users of the equipment are aware of its calibration status, e.g. "Calibrate Before Each Use", "Do Not Use Out Of Calibration".
- 5.2 Equipment not used for inspection, acceptance or critical measurements do not require labels or inclusion in the calibration system. It is at the discretion of the project engineer or liaison engineer to require that equipment not in the calibration system be identified (e.g. "Not Calibrated", "For Reference Use Only" or "Not In Calibration System").
- 5.3 Off-site facilities performing calibrations for BNL shall be approved by the BNL Quality Management Office.
- 5.4 Calibration procedures which are published standard practices, written instructions that accompany purchased equipment, or instructions established by other BNL divisions or sections should be used whenever possible. When calibrations are performed by an outside source, a procedure need not be maintained by BNL. In such cases, a calibration report or certificate is obtained as a basis for record.
- 5.5 Procedures for calibrating special or in-house built equipment shall be developed by the project engineer or liaison engineer or designee. These procedures shall comply with the SBMS Calibration subject area and be approved by the appropriate personnel.

- 5.6 The M&TE custodian shall ensure that the calibration program addresses the following calibration program requirements as defined in the SBMS Calibration subject area.
- Equipment list.
  - Issuance, use, and recalling of equipment. The recall system shall also address follow up actions to take when M&TE and associated standards have been recalled but not returned for calibration.
  - Adequacy of standards.
  - Environmental considerations during transportation, storage, and calibration.
  - Calibration frequency and tolerances.
  - Traceability of/to standards.
  - Pre-calibration Checks. M&TE and associated standards submitted for calibration shall be checked and the results recorded before adjustments and repairs are made.
  - Labeling - this includes M&TE serial number and calibration status.
  - Calibration resources. (internal/external)
  - Review of equipment calibration history.
- 5.7 Nonconformance.
- M&TE and associated standards found to be out of calibration, damaged, improperly maintained or calibrated, shall be identified as nonconforming and removed from use. The responsible individual shall ensure that the nonconforming equipment is not used until such time as an investigation, per the SBMS Nonconformance and Corrective and Preventive Action subject area, is performed.

## **6.0 Documentation**

- 6.1 Records shall be maintained for M&TE that requires calibration to show that established schedules and procedures have been followed. The records shall contain a history of calibration, calibration interval (i.e. frequency), date of last calibration, next calibration due date, conformance or nonconformance to required tolerances prior to and following adjustments, any limitation on use, assigned location, person responsible for the individual item, and the signature of the person that performed the calibration.
- 6.2 Each equipment record shall contain the procedure or instruction followed in performing the calibration, and the identity of the standard used.
- 6.3 Equipment lists, procedures, calibration records, and nonconformance reports shall be maintained for a minimum of three (3) years, unless otherwise specified, in order to furnish objective evidence of calibrations and maintenance to all M&TE Standards.

## **7.0 References**

- 7.1 SBMS, Calibration
- 7.2 SBMS, Nonconformance and Corrective and Preventive Action

## **8.0 Attachments**

None